ABSTRACT OF THE DISCLOSURE

This invention relates to metallurgy and machine building, more specifically to the development of a method that improves service life, durability and repair of machine components by applying coatings to working surfaces followed by special treatment of the surfaces.

The essence of the invention is deposition of erosion and corrosion resistant coatings on machine components, that comprises a plurality of microlayers wherein each of the microlayers comprises one or more elements selected from the transition metal group, solid solutions or interstitial phases based thereon, and wherein one or more of the microlayers is subjected to high energy non-metallic ion deposition that causes changes in structure and composition of the deposited microlayer thus improving performance characteristics. After the full coating has been deposited, a vibromechanical treatment with micro-pellets is applied to the surface of machine components, that improves distribution of residual stresses.

The method makes it possible to deposit coatings having high resistance to wear and corrosion, and having a sufficient level of fatigue strength of machine components, primarily gas-turbine compressor blades and vanes.